What is clamed is:

1. A chemical reaction method comprising:

providing a sample flow channel for containing a support with biological molecules fixed on its surface,

introducing a first solution into the sample flow channel,

introducing a first air layer into the sample flow channel,

introducing a sample into the sample flow channel,

introducing a second air layer into the sample flow channel,

introducing a second solution into the sample flow channel, and

forcing the first solution, the first air layer, the sample, the second air layer, and the second solution to move so that the sample may move relative to the support, and inducing a reaction between the biological molecules and substances contained in the sample.

2. The chemical reaction method according to claim 1, wherein the biological molecules comprise an enzyme and the reaction is enzyme-catalyzed digestion of the sample and the substances contained in the sample.

3. The chemical reaction method according to claim 1 further

comprising:

connecting an end of the sample flow channel to a first pipe and connecting the other end of the sample flow channel to a second pipe,

positioning the first air layer and the second air layer at the first pipe and the second pipe, respectively during the inducing the reaction.

4. The chemical reaction method according to claim 1, wherein the volume of the sample introduced when the sample is introduced is in a range, not less than 0.1 μL and not more than 100 μL.

5. The chemical reaction method according to claim 2, wherein a first volume of the introduced sample is larger than a second volume obtained by subtracting a third volume of the support from a fourth volume of internal capacity.

6. The chemical reaction method according to claim 1, wherein the sample forms a turbulent flow zone, or a transient flow zone which is a flow state between turbulent flow and laminar flow, inside the sample flow channel.

7. The chemical reaction method according to claim 1, wherein a relationship $\Delta P \propto Q^{1.5\pm0.4}$ is established between a water

pressure ΔP regulated to move the sample and a flow rate of the sample Q and the sample forms the turbulent flow zone or the transient flow zone during the inducing the reaction.

8. The chemical reaction method according to 1, further comprising:

composing the support of a plurality of micro particles and

composing the sample flow channel as a capillary.

9. The chemical reaction method according to 1, further comprising:

structuring the support to be a structure disposed at a reaction vessel and

structuring the sample flow channel as a channel disposed at the reaction vessel.

10. A chemical reaction device comprising:

a capillary for containing a plurality of micro particles and a sample,

a first pump and a second pump for controlling the flow rate of a liquid moving inside the capillary,

a first pipe, which connects to one end of the capillary and further to the first pump,

a second pipe, which connects the other end of the

capillary to the second pump,

an air blowing tube, a solution feeding tube, and a sample feeding tube connected to at least either the first pipe or the second pipe, wherein

the solution feeding tube is structured to feed the solution,

the sample feeding tube is structured to feed the sample, and

the air blowing tube is structured to blow air between the fed solution and the fed sample.

11. The chemical reaction device according to claim 10, wherein the sample may reciprocate.

12. The chemical reaction device according to claim 10, further comprising a temperature regulator for regulating temperature of the capillary.

13. The chemical reaction device of claim 10, wherein the capillary is of variable length type.

14. The chemical reaction device according to claim 10, further comprising:

a connecting valve for selectively connecting the air blowing tube, the solution feeding tube, and the sample feeding

tube to at least either the first pipe or the second pipe.

15. The chemical reaction device according to claim 10, further comprising:

a first connecting valve for selectively connecting the air blowing tube, the solution feeding tube, or the sample feeding tube, to the first pipe, and

a second connecting valve for selectively connecting the air blowing tube, the solution feeding tube, or the sample feeding tube to the second pipe.

16. An analysis system comprising:

a chemical reaction device comprising a capillary for containing a plurality of micro particles and a sample,

a first pump and a second pump for controlling the flow rate of a liquid moving inside the capillary,

a first pipe connected to one end of the capillary and further to the first pump,

a second pipe connected to the other end of the capillary and further to the second pump, an air blowing tube,

a solution feeding tube, and

a sample feeding tube connected to at least either the first pipe or the second pipe,

a temperature regulator for regulating temperature of the capillary,

a transport pipe for transporting the sample from the chemical reaction device,

a liquid chromatograph mass spectrometer connected to the transport pipe, and

an output display area for obtaining an output from the liquid chromatograph mass spectrometer, wherein

the solution feeding tube feeds the solution,

the sample feeding tube feeds the sample, and

the air blowing tube inserts air between the fed solution and the fed sample.

17. The analysis system according to claim 16, wherein with respect to the first pump and the second pump, a relationship $\Delta P \propto Q^{1.5\pm0.4}$ is established between a water pressure ΔP regulated to move the sample and a flow rate of the sample Q.

18. The analysis system according to claim 16, further comprising:

a database of proteins, and

an information processing device for searching the database for protein data associated with the output from the liquid chromatograph mass spectrometer to identify proteins contained in the sample.

19. The analysis system according to claim 16, wherein a

plurality of chemical reaction devices are provided, and wherein enzyme molecules are fixed to the micro particles contained in the chemical reaction devices.

20. The analysis system according to claim 16, wherein a plurality of the chemical reaction devices are provided which operate in parallel.

21. A chemical reaction method comprising:

providing a sample flow channel for containing a support with biological molecules fixed on its surface,

introducing a sample into the sample flow channel with avoiding diffusion of the sample, and

forcing the sample to move so that the sample may move relative to the support, and inducing a reaction between the biological molecules and substances contained in the sample.

22. The chemical reaction method according to claim 21 further comprising,

introducing a first solution into the sample flow channel,

introducing a first air layer into the sample flow channel,

introducing a second air layer into the sample flow channel,

introducing a second solution into the sample flow channel, and

forcing the first solution, the first air layer, the sample, the second air layer, and the second solution to move so that the sample may move relative to the support, and inducing the reaction between the biological molecules and the substances contained in the sample, wherein the first solution, the first air layer, the sample, the second air layer and the second solution are introducing into the sample flow channel in turn.